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JOB PROGRESS REPORT

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RESEARCH PROJECT

State: Montana

Project No. SE-1

Title: Statewide Endangered Species Research

Job. No. 2

Title: Evaluation of techniques for recovery of peregrine falcons in Montana.

Period Covered: 15 January 1981 - 1 January 1982

Prepared by: Dennis L. Flath

Approved by: John D. Cada

John P. Weigand

Date: 31 December 1981

Since this is a Progress Report only, results presented herein are not necessarily final and may be subject to change. For this reason, the information contained in this report may not be published or used for other purposes without permission of the Director.

ABSTRACT:

Four juvenile peregrine falcons *(Falco peregrinus anatum)* were released at a hack site in the Centennial Valley of southwestern Montana. All four peregrines fledged successfully, reached independence and dispersed.

Recommendations are made to continue the reintroduction of peregrines in the same area during 1982. A cluster of hack sites funded by various agencies is anticipated for the general area, and the site discussed here constitutes the contribution of the Montana Department of Fish, Wildlife and Parks to peregrine recovery in a selected portion of the Northern Rocky Mountains.

INTRODUCTION:

The American peregrine falcon *(Falco peregrinus anatum)* appears on both state and federal lists of endangered species. Reasons for its decline have been well documented (Hickey 1969). DDE (a metabolite of DDT) causes significant eggshell thinning, which in turn results in egg breakage during incubation. It has also been suggested that large amounts of DDT, and its metabolites, in the diet of peregrines has caused direct mortality. Abnormal behavior patterns may also cause mortality of eggs or chicks due to inattentiveness of "sick" adult peregrines.

Because of its high position in the food chain, the peregrine is probably more susceptible to that kind of contamination than other species. Many of the most common prey species utilized by peregrines are predators themselves (i.e., avocet, blackbird, robin). Chlorinated hydrocarbons become increasingly concentrated at each trophic level resulting in maximum concentrations in the apex predators.

In the Rocky Mountains, peregrine breeding populations are at an all time low (Enderson and Craig 1974). The Rocky Mountain/Southwest Peregrine Falcon Recovery Team has estimated that Montana hosted 23 historic pairs. Only one pair is known to occur in Montana presently, and they apparently have not produced any young in recent years. The state, however, has not been adequately surveyed. Occasional sightings of peregrines during the breeding season suggest that unknown, active eyries may be present.

Should active eyries be found, which would be available for manipulation, consideration would be given to direct fostering of captive produced young peregrines. In the meantime, however, reintroduction of young to selected sites via hacking remains the favored option for attempts at peregrine recovery.

OBJECTIVE:

To reestablish a nesting population of peregrine falcons consistent with the goals of the Rocky Mountain/Southwest Peregrine Falcon Recovery Plan.

PROCEDURES:

Technical aspects of peregrine reintroduction were performed by personnel of the Peregrine Fund, Inc., through a contract with the Department of Fish, Wildlife and Parks.

Site selection began with ground and air reconnaisance of six candidate locations. Altitude, topography, prey availability and climate were used to eliminate some sites from consideration. Presence of other raptors nesting near a potential hack site was also used in the evaluation procedure.

Particular attention was given to great horned owls, golden eagles, and prairie falcons. One site in the Centennial Valley, was judged to be the best of all the candidate sites, and was selected for the actual introduction. The site selected is part of a cluster of such sites in southwestern Montana and adjacent portions of Idaho and Wyoming.

The specific site selected is located at the mouth of Hellroaring Creek in the Centennial Valley, about 30 miles west of Yellowstone National Park. The site is on the south side of the valley, at an altitude of 7722 feet, and overlooks the Centennial Valley to the northwest. Though the slopes below the hack site are timbered, the valley is open and offers excellent hunting opportunities for peregrine falcons.

To the west, the valley contains a large shallow marsh, where an abundance of potential prey can be found. This marsh is contained with the Red Rock Lakes National Wildlife Refuge.

This site is an historic peregrine eyrie, and at least two more historic eyries once occurred in the vicinity.

Three plywood hack boxes were constructed according to plans provided by the Peregrine Fund. One of these was put in place on the selected cliff through use of a sling arrangement on a helicopter. Once the site was adequately prepared, arrangements were made for hack site attendants and transportation of the young peregrines from the breeding facility in Fort Collins, Colorado. Only one box is used at this site, the second box was made available to FWS personnel for use at a second site in the Centennial Valley. The third box was placed in storage pending future need.

RESULTS:

Four young peregrines were placed in the hack box on 3 July, 1981 (Table 1). These were held in the box, and fed daily with Coturnix quail by the hack site attendants. On 15 July, 1981, the front of the hack box was removed and the young peregrines were allowed to fledge. Food continued to be provided at the site by the attendants until the young peregrines reached independence and dispersed.

Table 1. Fledging data for four peregrine falcons at the Hellroaring hack site.

Sex	Band #	Hatch Date	Fledged	Age at Fledge
M	816-15383	5/30/81	7-15, 1505 hrs.	46 days
M	816-15384	6/1/81	7-15, 1815 hrs.	44
M	816-15388	5/30/81	7-15, 1445 hrs.	46
F	987-14642	5/28/81	7-16, 1615 hrs.	48

All young were banded with federal lock-on bands, and each carried a short range radio transmitter during the post release phase. Transmitters were designed to fall off after about 10 days. Their primary purpose was to allow the attendants to keep track of the young peregrines during the critical period following opening of the box.

During the post fledging period, the young peregrines developed their flight and hunting skills rapidly. One encounter with a pair of golden eagles was observed, but the attendants were successful in distracting the eagles' attention long enough for the peregrines to reach safety. All aspects of the entire hacking procedure went smoothly, and the effort is judged to have been successful.

During the course of this study, interagency coordination was accomplished between the Montana Department of Fish, Wildlife and Parks, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, the Peregrine Fund, Wyoming Game and Fish Department, and the Idaho Fish and Game Department, through meetings, correspondence and personal communication. State-share funding for this project was provided by Exxon on behalf of the Exxon affiliates operating in Montana, including Exxon Coal Resources and the Carter Mining Company.

RECOMMENDATIONS:

The success of the 1981 reintroduction effort clearly points to the possibilities for recovery of peregrine falcons through hacking. However, first year mortality for peregrines in the wild is about 70 percent. In order to meet the objectives of this job it will be necessary to continue reintroductions in southwestern Montana for several years.

It is recommended that this project be continued with reintroduction of more young peregrines at the same site in 1982. If, however, that site is defended by a returning peregrine, it may become necessary to select an alternate site nearby.

LITERATURE CITED:

Enderson, J.H. and J. Craig. 1974. Status of the peregrine falcon in the Rocky Mountains in 1973. Auk 91(4):727-736.

Hickey, J.J., ed. 1969. Peregrine falcon populations. Univ. Wisc. Press, Milwaukee. 567 pp.

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JOB PROGRESS REPORT

RESEARCH PROJECT

State: Montana

Project No. SE-1 Title: Statewide Endangered Species Research

Job. No. 2 Title: Evaluation of techniques for recovery of peregrine falcons in Montana.

Period Covered: 1 January 1983 - 31 December 1983

Prepared by: Dennis L Flath Approved by: John D. Cada

Date: 31 December 1983 Glenn Erickson

Since this is a Progress Report only, results presented herein are not necessarily final and may be subject to change. For this reason, the information contained in this report may not be published or used for other purposes without permission of the Director.

ABSTRACT:

Eight juvenile peregrine falcons (**Falco peregrinus anatum**) were released at two hack sites in the Centennial Valley of southwestern Montana. Four peregrines fledged successfully, reached independence, and dispersed.

Recommendations are made to continue the reintroduction of peregrines in the same area during 1984. A cluster of hack sites funded by various agencies is anticipated for the general area, and the sites discussed here constitute the contribution of the Montana Department of Fish, Wildlife and Parks to peregrine recovery in a selected portion of the Northern Rocky Mountains.

INTRODUCTION:

The American peregrine falcon (**Falco peregrinus anatum**) appears on both state and federal lists of endangered species. Reasons for its decline and its status in the Rocky Mountains were discussed previously (Flath 1981).

The state, however, has not been adequately surveyed for active peregrine eyries. Occasional sightings of peregrines during the breeding season continue to be made, suggesting that unknown, active eyries may be present. Consequently, additional survey work is desirable.

Should active eyries be found which would be available for manipulation, consideration would be given to direct fostering of captive produced young peregrines. In the meantime, however, reintroduction of young to selected sites via hacking remains the favored option for attempts at peregrine recovery.

OBJECTIVE:

To reestablish a nesting population of peregrine falcons consistent with the goals of the Rocky Mountain/Southwest Peregrine Falcon Recovery Plan.

PROCEDURES:

Technical aspects of peregrine reintroduction were performed by personnel of the Peregrine Fund, Inc., through a contract with the Department of Fish, Wildlife and Parks.

Site selection procedures and considerations were described by Flath (1981). Both hack sites used in 1982 (Flath 1982) were again used in 1983. These are referred to as Hellroaring and West Centennial respectively. The Hellroaring site is a rock pinnacle, while the West Centennial site is a tower.

RESULTS:

Four young peregrines were placed in each of the hack boxes on 3 July, 1983 (Table 1). These were held in the boxes and fed daily with Coturnix quail until physical development indicated they were ready to fledge. Once the box fronts were removed, food continued to be provided by site attendants until the young peregrines reached independence and dispersed.

All young were banded with federal lock-on bands, and each carried a short range radio transmitter during the post release phase. Transmitters were designed to fall off after about 10 days. Their primary purpose was to allow the attendants to keep track of the young peregrines during the critical period following opening of the box.

Table 1. Fledging data for eight peregrine falcons in the Centennial Valley, 1983.

SEX	BAND #	SITE	FLEDGED	AGE AT FLEDGE
F	987-14658	Hellroaring	7-15, 2000 hrs.	44 days
M	816-15364	Hellroaring	7-14, 1930 hrs.	44 days
M	816-15367	Hellroaring	7-14, 1927 hrs.	44 days
M	816-15368	Hellroaring	7-14, 1925 hrs.	45 days
F	987-14659	West Cent.	Unsuccessful	-------
M	816-15369	West Cent.	Unsuccessful	-------
F	987-14656	West Cent.	Unsuccessful	-------
F	987-14657	West Cent.	Unsuccessful	-------

All 4 peregrines fledged successfully and achieved independence from the Hellroaring site. None of the peregrines released at the West Centennial site achieved independence, though fledging did occur. Two of these (one male and one female) appeared to have died as a result of collisions with a barbed wire fence, although this was not confirmed due to lack of post mortem examinations. One female drowned, and another female apparently left the area after having lost its transmitter. This female was judged too young (48 days) to survive at that time and is presumed dead.

Following release of the young peregrines at the West Centennial site, a subadult (yearling) male spent about 2 weeks near the hack tower. This bird fed on quail and interacted with the released birds. Efforts to read its band number were unsuccessful, but it was likely one of the birds released at that site in 1982. Details of the hacking procedure are presented by Burhham (1983: 97-107).

During the course of this study, interagency coordination was accomplished between the Montana Department of Fish, Wildlife and Parks, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, the Peregrine Fund, Wyoming Game and Fish Department, and the Idaho Fish and Game Department, through meetings, correspondence, and personal communication. State-share funding for this project was provided by Exxon on behalf of the Exxon affiliates operating in Montana, including Exxon Coal Resources and the Carter Mining Company.

PESTICIDE CONTAMINATION:

The pesticide DDT has been banned in the United States since 1972, but ongoing use in Mexico and Central and South America continues to threaten the welfare of migrant species. Optimism that the pesticide problem is diminishing is often encountered. However, recent tests show the continued presence of a number of hazardous chemicals in Montana waterfowl (Flath 1982). Schladweiler and Weigand (1983) present evidence that endrin, heptachlor, PCBs, DDT, and dieldrin continue to pose hazards to Mon-

tana wildlife. They recommended a series of immediate steps to reduce and eventually terminate these hazards as well as development of safer, yet effective, alternatives to use of hazardous compounds for pest control. They also recommended further tissue analysis of wildlife on a periodic basis; a recommendation which is in keeping with the overall objectives of this study.

The continued occurrence of chlorinated hydrocarbon compounds could seriously compromise recovery efforts for peregrines. Contamination levels in many potential prey species are poorly known in spite of the rigorous nature of the aforementioned study (Schladweiler and Weigand 1983).

RECOMMENDATIONS:

The success of three years reintroduction efforts clearly point to the possibilities for recovery of peregrine falcons through hacking. Thus far, 14 of 20 young peregrines involved in these releases have successfully survived to independence and dispersed. However, first year mortality for peregrines in the wild is about 70 percent. In order to meet the objectives of this job, it will be necessary to continue reintroductions in southwestern Montana in 1984.

Poor success at the West Centennial tower mandates further evaluation of this site. Considerations of moving the location or using an alternate site are underway and will be completed prior to 1984 reintroduction efforts.

The possibility exists that 3 sites may be used in southwestern Montana in 1984. With an expanded geographic area being potentially involved, efforts to secure interagency cooperation and funding to further sample prey base contamination is desirable. It is recommended that 2 additional locals be sampled early in 1984.

LITERATURE CITED:

Burnham, W., ed. 1983. The Peregrine Fund's Rocky Mountain Program Operations Report, 1983. The Peregrine Fund. Inc., Fort Collins, CO. 161 pp.

Flath, D. L. 1981. Evaluation of techniques for recovery of peregrine falcons in Montana. Montana Department of Fish, Wildlife and Parks., Job Progress Report., Project SE-1, Job 2. 3 pp.

______. 1982. Evaluation of techniques for recovery of peregrine falcons in Montana. Montana Department of Fish, Wildlife and Parks., Job Progess Report, Project SE-1, Job 2. 6 pp.

Schladweiler, P. and J. P. Weigand. 1983. Relationships of endrin and other chlorinated hydrocarbon compounds to wildlife in Montana, 1981-1982. Montana Department of Fish, Wildlife and Parks. Helena. 176 pp.

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Jan 1984 - Dec.31, 1984

JOB PROGRESS REPORT

RESEARCH PROJECT

State: Montana

Project No. SE-1 Title: Statewide Endangered Species Research

Job. No. 2 Title: Evaluation of techniques for recovery of peregrine falcons in Montana.

Period Covered: 1 January 1984 - 31 December 1984

Prepared by: Dennis L Flath

Approved by: John D. Cada

Glenn Erickson

Date: 31 December 1984

Since this is a Progress Report only, results presented herein are not necessarily final and may be subject to change. For this reason, the information contained in this report may not be published or used for other purposes without permission of the Director.

ABSTRACT:

Twelve juvenile peregrine falcons (**Falco peregrinus anatum**) were released at three hack sites in southwestern Montana. Ten peregrines fledged successfully, reached independence, and dispersed. Two more young were fledged by a returning pair, marking the first wild mating of peregrines in Montana in many years.

Recommendations are made to continue the reintroduction of peregrines during 1985. A cluster of hack sites funded by various agencies is anticipated for the general area, and the sites discussed here constitute the contribution of the Montana Department of Fish, Wildlife and Parks to peregrine recovery in a selected portion of the Northern Rocky Mountains.

INTRODUCTION:

The American peregrine falcon (**Falco peregrinus anatum**) appears on both state and federal lists of endangered species. Reasons for its decline and its status in the Rocky Mountains were discussed previously (Flath 1981).

The state, however, has not been adequately surveyed for active peregrine eyries. Occasional sightings of peregrines during the breeding season continue to be made, suggesting that unknown, active eyries may be present. Consequently, additional survey work is desirable.

Should active eyries be found which would be available for manipulation, consideration would be given to direct fostering of captive produced young peregrines. In the meantime, however, reintroduction of young to selected sites via hacking remains the favored option for attempts at peregrine recovery.

OBJECTIVE:

To reestablish a nesting population of peregrine falcons consistent with the goals of the Rocky Mountain/Southwest Peregrine Falcon Recovery Plan.

PROCEDURES:

Technical aspects of peregrine reintroduction were performed by personnel of the Peregrine Fund, Inc., through a contract with the Department of Fish, Wildlife and Parks.

Site selection procedures and considerations were described by Flath (1981). The Hellroaring site used in previous years (Flath 1983) was again used in 1984. The West Centennial tower site used in 1983 was not used; it was replaced by a new tower site at Lima Reservoir. A cliff site in the Gallatin drainage, near Squaw Creek, was also used for the first time in 1984.

RESULTS:

Four young peregrines were placed in each of the hack boxes during July, 1984 (Table 1). These were held in the boxes and fed daily with Coturnix quail until physical development indicated they were ready to fledge. Once the box fronts were removed, food continued to be provided by site attendants until the young peregrines reached independence and dispersed.

All young were banded with federal lock-on bands, and each carried a short range radio transmitter during the post release phase. Transmitters were designed to fall off after about 10 days. Their primary purpose was to allow the attendants to keep track of the young peregrines during the critical period following opening of the box.

Table 1. Fledging data for twelve peregrine falcons in Southwestern Montana, 1984.

Sex	Band #	Site	Fledged (Age)	Fate
F	987-68911	Hellroaring	16 July (44 days)	Successful
F	987-68924	Hellroaring	15 July (44 days)	Successful
F	987-68922	Hellroaring	16 July (44 days)	Successful
M	816-17751	Hellroaring	14 July (43 days)	Successful
M	816-72305	Lima Res.	25 July (44 days)	Successful
M	816-72306	Lima Res.	26 July (43 days)	Successful
F	987-68938	Lima Res.	27 July (43 days)	Successful
F	987-68939	Lima Res.	26 July (42 days)	Successful
F	987-68925	Gallatin	11 July (40 days)	Failed
M	816-17752	Gallatin	11 July (40 days)	Failed
F	987-68912	Gallatin	11 July (41 days)	Successful
M	816-17748	Gallatin	11 July (41 days)	Successful

A total of 10 young peregrines fledged successfully and reached independence, four each from the Hellroaring and Lima Reservoir sites, and two from the Gallatin site. Two peregrines released from the Gallatin site were found dead about two weeks after release. Cause of death was undetermined due to stage of decomposition, and remains speculative. Details of the hacking procedure are presented by Burnham (1984 In Press).

In the Centennial Valley, a returning pair, presumably from previous releases, successfully nested and fledged 2 young. This landmark event clearly illustrates the potential for peregrine recovery in suitable habitat through use of the methods employed. One other returning nesting pair was recorded in nearby Yellowstone National Park, Wyoming.

One dead peregrine was found near Hebgen Lake during the report period. The bird was a male, band number 816-17750, which had been released at the nearby Targhee, Idaho, site on July 6. It was last seen on July 22, and found dead on July 26. No cause of death was apparent. The specimen was in excellent condition, and was salvaged by the U.S. Fish and Wildlife Service for educational purposes.

During the course of this study, interagency coordination was accomplished between the Montana Department of Fish, Wildlife and Parks, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, the Peregrine Fund, Wyoming Game and Fish Department, and the Idaho Fish and Game Department, through meetings, correspondence, and personal communication. State-share funding for this project was provided by Exxon on behalf of the Exxon affiliates operating in Montana, including Exxon Coal Resources and The Carter Mining Company.

RECOMMENDATIONS:

The success of reintroduction efforts in establishing breeding peregrines clearly point to the possibilities for recovery of peregrine falcons through hacking. Thus far, 24 of 32 young peregrines involved in these releases have successfully survived to independence and dispersed. In addition, two young were successfully fledged by the returning pair. However, first year mortality for peregrines in the wild is about 70 percent. In order to meet the objectives of this job, it will be necessary to continue reintroductions in southwestern Montana in 1985.

The possibility exists that 4 sites may be used in southwestern Montana in 1985. With an expanded geographic area being potentially involved, efforts to secure interagency cooperation and funding to further sample prey base contamination is desirable. It is recommended that 2 additional locals be sampled early in 1985.

LITERATURE CITED:

Burnham, W., ed. 1984. The Peregrine Fund's Rocky Mountain Program Operations Report, 1984. The Peregrine Fund. Inc., Boise, ID. In Press.

Flath, D.L. 1981. Evaluation of techniques for recovery of peregrine falcons in Montana. Montana Department of Fish, Wildlife and Parks, Job Progress Report., Project SE-1, Job 2. 3 pp.

_____. 1983. Evaluation of techniques for recovery of peregrine falcons in Montana. Montana Department of Fish, Wildlife and Parks, Job Progress Report, Project SE-1, Job 2. 5 pp.

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RESEARCH PROJECT

State: Montana

Project No. SE-1 Title: Statewide Endangered Species Research

Job. No. 2 Title: Evaluation of techniques for recovery of peregrine falcons in Montana.

Period Covered: 1 January 1985 - 31 December 1985

Prepared by: Dennis L. Flath Approved by: John D. Cada

Date: 31 December 1985 Glenn Erickson

Since this is a Progress Report only, results presented herein are not necessarily final and may be subject to change. For this reason, the information contained in this report may not be published or used for other purposes without permission of the Director.

ABSTRACT:

Twenty-five juvenile peregrine falcons (**Falco peregrinus anatum**) were released at four hack sites in southwestern Montana. Twenty-two peregrines fledged successfully, reached independence, and dispersed. Three more young were fledged by a wild pair, the second consecutive wild mating of peregrines in Montana.

Recommendations are made to continue the reintroduction of peregrines during 1986. A cluster of hack sites funded by various agencies is presently used in the general area, and the sites discussed here constitute the contribution of the Montana Department of Fish, Wildlife and Parks to peregrine recovery in a selected portion of the Northern Rocky Mountains. Recommendations are also presented to prioritize survey efforts to locate returning peregrines.

INTRODUCTION:

The American peregrine falcon (**Falco peregrinus anatum**) appears on both state and federal lists of endangered species. Reasons for its decline and its status in the Rocky Mountains were discussed previously (Flath 1981).

The state, however, has not been adequately surveyed for active peregrine eyries. Occasional sightings of peregrines during the breeding season continue to be made, suggesting that unknown, active eyries may be present. Consequently, additional survey work is desirable.

Should active eyries be found which would be suitable for manipulation, consideration would be given to direct fostering of captive produced young peregrines. In the meantime, however, reintroduction of young to selected sites via hacking remains the favored option for attempts at peregrine recovery.

OBJECTIVE:

To reestablish a nesting population of peregrine falcons consistent with the goals of the Rocky Mountain/Southwest Peregrine Falcon Recovery Plan.

PROCEDURES:

Technical aspects of peregrine reintroduction were performed by personnel of the Peregrine Fund, Inc., through contract with the Department of Fish, Wildlife and Parks.

Site selection procedures and considerations were discussed previously (Flath 1981). Sites used the previous year (Flath 1984) were used again in 1985. The Lima Reservoir tower was used for 2 hack boxes in 1985, and these are identified as A and B in Table 1. In addition, a fourth site, near Crown Butte, was added in the Gallatin Canyon in 1985.

RESULTS:

Five young peregrines were placed in each of the hack boxes during July, 1985 (Table 1). These were held in the boxes and fed daily with Coturnix quail until physical development indicated they were ready to fledge. Once the box fronts were removed, site attendants continued to provide food until the young peregrines reached independence and dispersed.

All young were banded with federal lock-on bands, and each carried a short range radio transmitter during the post release phase. Transmitters, designed to fall off after about 10 days, allowed site attendants to monitor the young peregrines during the critical period following opening of the box.

Table 1. Fledging data for twenty-five peregrine falcons in southwestern Montana, 1985.

Sex	Band #	Site	Fledged (Age)	Fate
M	816-72342	Hellroaring	10 July (43 days)	Successful
F	987-68983	Hellroaring	10 July (43 days)	Successful
F	987-68981	Hellroaring	10 July (43 days)	Successful
M	816-72343	Hellroaring	10 July (43 days)	Successful
F	987-68982	Hellroaring	10 July (43 days)	Successful
F	987-68988	Lima Res. (A)	24 July (44 days)	Successful
F	987-68989	Lima Res. (A)	24 July (44 days)	Successful
M	816-72355	Lima Res. (A)	24 July (44 days)	Successful
M	816-72356	Lima Res. (A)	24 July (43 days)	Successful
F	987-68992	Lima Res. (A)	24 July (44 days)	Successful
M	816-72354	Lima Res. (B)	24 July (44 days)	Successful
F	987-68990	Lima Res. (B)	24 July (44 days)	Successful
F	987-68991	Lima Res. (B)	24 July (43 days)	Successful
M	816-72358	Lima Res. (B)	24 July (42 days)	Successful
M	816-72357	Lima Res. (B)	24 July (42 days)	Successful
F	987-84501	Crown Butte	1 Aug. (43 days)	Failed
F	987-84502	Crown Butte	1 Aug. (41 days)	Failed
F	987-84503	Crown Butte	1 Aug. (43 days)	Successful
F	987-84504	Crown Butte	1 Aug. (43 days)	Successful
M	816-72365	Crown Butte	1 Aug. (42 days)	Failed
M	816-72376	Gallatin	8 Aug. (44 days)	Successful
M	816-72377	Gallatin	8 Aug. (44 days)	Successful
F	987-84521	Gallatin	8 Aug. (44 days)	Successful
F	987-84522	Gallatin	8 Aug (41 days)	Successful
F	987-84523	Gallatin	8 Aug. (42 days)	Successful

A total of 22 young peregrines fledged successfully and reached independence, five each from the Gallatin and Hellroaring sites, ten from the Lima Reservoir site, and two from the Crown Butte site. Three peregrines lost at the Crown Butte site were apparently lost to predation. One was killed by a prairie falcon, one by a golden eagle, and another by an unknown predator. Details of the hacking procedure are presented by Burnham (1985).

In the Centennial Valley, a pair of peregrines returned to nest for a second year. This wild nesting was again successful and fledged 3 young (Table 2). Other peregrines were observed in 5 different locations within 100 km. of existing hack sites during summer, 1985. These areas could host occupied wild eyries in the future.

Thus far, 46 peregrines have been successfully released in southwestern Montana, over the course of this study (Table 2). Returning peregrines have been observed as both banded and unbanded individuals, with most being "unknown". The presence of unbanded peregrines suggests possible presence of an unknown wild

Table 2. Peregrine falcon recovery efforts in southwestern Montana.

Year	# Sites	# Placed	# Successful	Wild pairs	# Wild fledged
1981	1	4	4	-	-
1982	2	8	6	-	-
1983	2	8	4	-	-
1984	3	12	10	1	2
1985	4	25	22	1	3
Total		57	46		5

eyrie. Birds fledged from the known wild site in 1984 and 1985 have not been banded.

During the course of this study, interagency coordination was accomplished between the Montana Department of Fish, Wildlife and Parks, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, the Peregrine Fund, Wyoming Game and Fish Department, and the Idaho Fish and Game Department, through meetings, correspondence, and personal communication. State-share funding for this project was provided by Exxon on behalf of the Exxon affiliates operating in Montana, including Exxon Coal Resources and The Carter Mining Company.

RECOMMENDATIONS:

The success of reintroduction efforts in establishing breeding peregrines clearly points to the possibilities for recovery of peregrine falcons through hacking. However, first year mortality for peregrines in the wild is about 70 percent. In order to meet the objectives of this job, it will be necessary to continue reintroductions in southwestern Montana in 1986.

The possibility exists that 5-6 sites may be used in southwestern Montana in 1986. With an expanded geographic area being potentially involved, interagency cooperation and funding is becoming more important. Liaison efforts should be increased as demands dictate.

Priorities need to be established to facilitate efficiency in locating wild eyries. It is recommended that first priority survey efforts be directed at known historic eyries within 100 km. of existing hack sites. Other priorities should be established for potentially suitable habitat in southwestern Montana based on proximity to hack sites. Summer occurrences of peregrines in other parts of the state should also be given a high priority. Recommended priority sequence is presented in Figure 1.

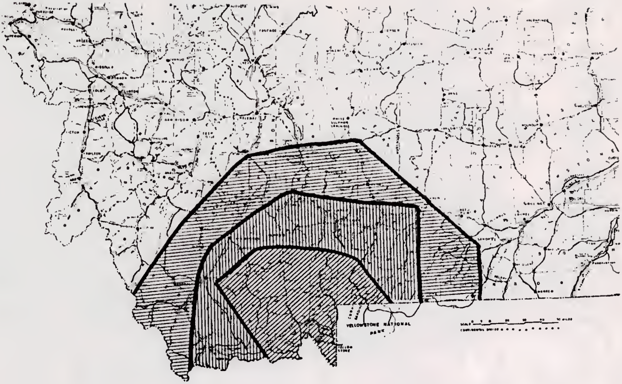

Figure 1. Recommended priorities for peregrine surveys in Montana. Priority 1: Historic eyries in all shaded areas, and summer sightings of peregrines elsewhere. Priority 2: Suitable habitat in diagonal hatched area. Priority 3: Suitable habitat in vertically hatched area. Priority 4: Suitable habitat in horizontally hatched area and historic eyries elsewhere. Priority 5: Suitable habitat elsewhere, outside shaded areas.

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